

SOV/24-59-2-11/30

AUTHOR: Fedorov, S. M. (Leningrad)**TITLE:** Use of the Oscillation Index in Calculating Nonlinear Servo Systems (Primeneniye pokazatelya kolebatel'nosti k raschetu nelineynykh sledyashchikh sistem)**PERIODICAL:** Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 2, pp 71-76 (USSR)**ABSTRACT:** The oscillation index M is simply the relative height of the resonance peak on the frequency-response curve. It is, of course, also a measure of the disposition of the frequency response of the open-loop system relative to the point $-1, j0$ in the case of linear systems, and of the deviation of the frequency response curve for the linear part of the system from the amplitude response curve for the nonlinear part in the case of nonlinear systems. This latter approach is the one used here. The treatment is designed to result in formulae suitable for use in synthesis work. Section 1 deals with the derivation of the index for the nonlinear part from the amplitude-phase characteristics of the linear part. The structural diagram is that of Fig 1. The transfer function for the closed-loop system is that of Eq (1.1), where the symbols have their usual meanings. The generalized Nyquist criterion is then introduced, and M

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Use of the Oscillation Index in Calculating Nonlinear Servo Systems

is deduced; then the equation for the lines of constant M is given. The parameters of these lines (circles) are given by Eq (1.5). Eq (1.6) relates to the case (a common one) in which $z(A)$ is a single-valued odd function. Eqs (1.8) and (1.9) relate to the circles of constant phase shift. Figs 2 and 3 illustrate the construction of these circles, and their uses in relation to establishing whether the amplitude-phase characteristic lies outside the forbidden circle; the relation of Eqs (1.10) and (1.11) to Figs 2 and 3 is self-evident. Reciprocal amplitude-phase characteristics are then touched on. Section 2 deals with the forbidden zones for various typical nonlinearities, namely 1) relay characteristic with a dead zone, 2) linear characteristic with a dead zone, 3) linear characteristic with saturation, 4) a combination of 2) and 3). The table illustrates the results. Fig 4 relates to the more usual case in which the

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form of the forbidden zone depends on the amplitude of the input signal (because M varies with the input) for a device with saturation; Fig 5 does the same for the frequency-phase response. The paper contains 5 figures, 1 table and 9 references, of which 6 are Soviet and 3 English.

SUBMITTED: October 24, 1958.

Card 3/3

BESEKERSKIY, V. A.; FEDOROV, S. M.

"The Application of the Equivalent Transmission Function to
the Design of Following Systems for Combined Control by the
Logarithmic Frequency Characteristics."

paper presented at the First International Congress of the International
Federation on Automatic Control (IFAC), Moscow, 27 June - 7 July 1960

S/024/60/000/02/014/031

E140/E135

AUTHORS: Besekerskiy, V.A., and Fedorov, S.M. (Leningrad)

TITLE: The Equivalent Transfer Function for the Design of
q Servomechanisms with Non-unit Feedback

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
nauk, Energetika i avtomatika, 1960, Nr 2, pp 110-115 (USSR)

ABSTRACT: It is recalled that non-unit feedback may be used to
increase the precision of servomechanisms, in particular
to compensate static, velocity and similar errors.
Theoretically non-unit feedback may be used to achieve
complete invariance of a system but this is physically
unrealisable due to the system being located at the
boundary of stability. The equivalent transfer functions
of the open system are derived for the static and astatic
cases. These functions may be used to design servo-
mechanisms by the method of logarithmic amplitude
characteristics. An example is calculated for an
integrating drive.

Card
1/1

There are 4 figures and 7 references, of which 6 are
Soviet and 1 is a translation from English.



SUBMITTED: December 21, 1959

"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2

BESEKERSKIY, V.A. (Leningrad); FEDOROV, S.M. (Leningrad)

Synthesis of servo systems with digital computers by a method
which involves the use of logarithmic amplitude characteristics.
Izv. AN SSSR. Otd. tekh. nauk. Energ. i avtom. no.3:73-81 Jl '61.

(MIRA 14:7)

(Servomechanisms)

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

16.8000(1068,1132,1031)

27663

8/024/61/000/004/021/025
E140/E135

AUTHOR: Fedorov, S.M. (Leningrad)

TITLE: The effects of delay in the synthesis of digital servomechanisms.

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1961, No.4, pp.184-190

TEXT: The article is a further development of earlier work (Ref. 1: V.A. Bezukerskiy, S.M. Fedorov, "The synthesis of digital servomechanisms by the method of logarithmic amplitude characteristics", Izv. AN SSSR, OTN, Energetika i avtomatika, 1961, No.5). In the present analysis a delay circuit is included in the feedback loop, permitting delay due to the computer cycle to be taken into account. As before, the computer can perform any operations not connected with integro-differential transformations. Again the W-transform is used. As in Ref. 1, the analysis is performed separately for the low- and high-frequency ranges, assuming the quantity inverse to the computer cycle duration to be greater than half the cutoff frequency of the logarithmic amplitude characteristic of the continuous portion

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27663
S/024/61/000/004/021/025
The effects of delay in the synthesis... E140/E135

of the system. An example is given to illustrate the computation procedure.

There are 3 figures and 5 references; 4 Soviet and 1 English. The English language reference reads as follows:

Ref.2: G.W. Johnson, D.P. Lindorf, G.A. Nordling. Extension of continuous-data systems design techniques to sampled-data control systems. AIEE Trans, 1955, Part II, V.74.

SUBMITTED: March 25, 1961

Card 2/2

9,7100

16,8000(1031,1121,1132)

AUTHORS: Besekerskiy, V.A. and Fedorov, S.M. (Leningrad)

TITLE: The synthesis of servo-systems containing digital computers by the method of logarithmic amplitude characteristics

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1961, No.3, pp.73-81

TEXT: The article considers the application of w-transforms to automatic control systems of a sampled-data character. Neglecting amplitude-quantization errors, but taking into account time-quantization, systems containing digital computers are included in this category. The w-transform permits synthesis to be carried out using customary concept from the theory of continuous systems, in particular the widely applied method of logarithmic-amplitude frequency characteristics. In the low frequency region the transfer function of a system of the type considered practically coincides with that of the corresponding continuous system. Assuming that $2/T_0 > \omega_c$, where T_0 is the repetition period of the computer and ω_c is the cut-off frequency

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23156
S/024/61/000/003/004/012
E140/E463

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The synthesis of servo-systems ... El40/E463

of the continuous part, the high frequency characteristics are obtained by introducing a pseudo-frequency λ_s

$$\lambda = \frac{2}{T_0} \operatorname{arc} \operatorname{tg} \frac{\omega_0}{2} = \frac{2}{T_0} \frac{w}{j} \quad (4.6)$$

A simple procedure described in § 5 permits the transfer characteristic in the high frequency range to be obtained. The article concludes with a simple example of a servo-mechanism with second order astatism. The considerations of the article extend to simple pulse systems and systems with digital computers, carrying out any operation not connected with integro-differential transformation. There are 7 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English language publication reads as follows: Johnson G.W., Lindorf D.P., Nordling G.A., AIEE Trans., 1955, part II, v.74.

SUBMITTED: January 31, 1961

Card 2/2

FEDOROV, S.M. (Leningrad)

Methodology for compensating servo systems using digital computers.
Izv. AN SSSR. Otd. tekhn. nauk. Energ. i avtom. no.3:132-142 My-Je
'62. (MIRA 15:6)
(Servomechanisms) (Electronic digital computers)

BESEKERSKIY, Viktor Antonovich; PAL'TOV, Ivan Petrovich; FABRIKANT,
Yevgeniy Anatol'yevich; FEDOROV, Stepan Mikhaylovich; CHINAYEV,
Petr Ivanovich; SOBOLEV, O.K., red.; MURASHOVA, N.Ya., tekhn.
red.

[Collection of problems on the theory of automatic control]
Sbornik zadach po teorii avtomaticheskogo regulirovaniia. [By]
V.A.Besekerskii i dr. Moskva, Fizmatgiz, 1963. 408 p.
(MIRA 16:12)
(Automatic control)

FEDCROV, S.M. (Leningrad)

Consideration of level quantization in the synthesis of digital
automatic control systems. Izv. AN SSSR. Otd. tekhn. nauk. Tekhn.
kib. no.1:181-189 Ja-F '63. (MIRA 16:7)

(Automatic control)
(Electronic digital computers)

L 1M26-65 ENT(d)/ENT(1) Pg-1/Pk-1/Pl-1/Po-1/Pa-1 LJP(c)/ASD(s)-5/
AFMD(p)/ESD(dp) BC

ACCESSION NR: APM048626

S/0280/64/000/006/0093/0099

AUTHOR: Fedorov, S. M. (Leningrad)

B

TITLE: The dynamics of discrete automatic control systems containing conservative or
oscillatory elements

SOURCE: AN SSSR. Izv. Tekhnicheskaya kibernetika, no. 5, 1964, 93-99

TOPIC TAGS: automation, discrete control system, control system dynamics, conserva-
tive element, oscillatory element, control system stability

ABSTRACT: It is shown that a system with an unstable, open loop transfer function of the
type

$$W_0(s) = \frac{K}{s^2 + T_1^2 s^2} \quad (1)$$

can be stabilized by the addition of a discrete sampling element, as shown in Fig. 1 of the
article. Using the Hurwitz stability criterion, the various stability regions for this
system can be drawn in Fig. 2, where K is the gain coefficient and T_1 is the time constant.
The time constant is given by

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$$M = \frac{1}{T} \sin \left[\frac{\pi}{2} T - \frac{\pi}{2} (2n-1) \right]$$

Dynamic frequency plots of the system transfer function. It is shown that the
corresponding systems with more complex internal structures have the

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CIA-RDP86-00513R000412630003-2

to the derivative of the error signal. Orig. art. has 24 equations, 1 table and 5 figures.

ASSOCIATION: None

SUBMITTED: 18 Dec 03

ENCL: 02

SUB CODE: IE

NO REF SOV: 004

OTHER: 002

Card 2/3

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

ACCESSION NR: AP4048028

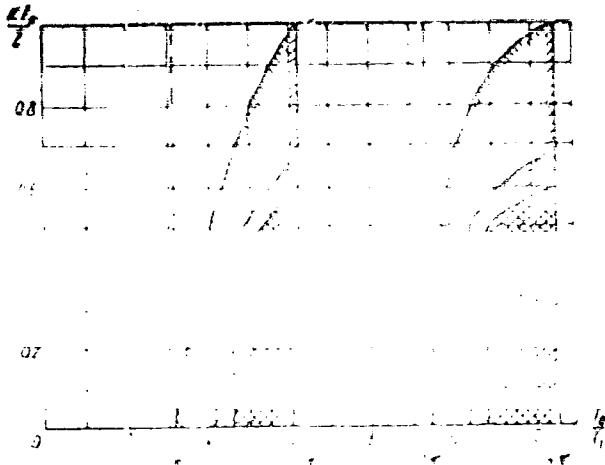


Fig. 2 Regions of stability and various

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ANDREEV, S. M.

Combined control in servosystems with digital computers

Trudy soveshchaniya. Moscow, Izd-vo Nauka, 1964, 346-355

TOPIC TAGS: automatic control system, digital computer, automati-

c computer pro-

selective feedback

ABSTRACT: Combined control in servosystems with digital computers is examined in this article. The author commences by determining the systems with a discrete open circuit, as well as the transfer function. Using the transfer function of an open system, the author then proximate fulfillment of the condition of invariance and the effect of combined control with digital computers. The fulfillment of invariance with the introduction of delay is then determined. The effect of external perturbations with the introduction of selective feedback

[6C]
ers is examined in
of combined control
of these systems.
determines the ap-
nthesis of systems
the condition of
The suppression of
selective feedback

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ACCESSION NR: AT5004126

is analyzed to determine the sensitivity of the system. The author concludes with a brief analysis of discrete systems of combined control with continuous open circuit. He points out that the use of combined control in servosystems with digital computers during the fulfillment conditions of total or partial invariance increases the tracking accuracy. In addition, the synthesis of systems of combined control with digital computers is conveniently effected by the method of logarithmic frequency characteristics. Orig. art. has: 4 Figures and 36 formulas.

ASSOCIATION: None

SUBMITTED: 24 Sep 64

NO REF Sov: 011

ENCL: 00

OTHER: 001

SUB CODE: IE, DR

Card 2/2

KULEBAKIN, V.S., akademik, otv. red.; PETROV, B.N., akademik, otv. red.; BODNER, V.A., doktor tekhn. nauk, red.; VORONOV, A.A., doktor tekhn. nauk, red.; IVAKHNENKO, A.G., red.; ISHLINSKIY, A.Yu., akademik, red.; KOSTYUK, O.M., kand. tekhn. nauk, red.; KRASSOV, I.M., kand. tekhn. nauk, red.; KUNTSEVICH, V.M., kand. tekhn. nauk, red.; KUKHTEJKO, A.I., red.; RYABOV, B.A., doktor tekhn. nauk, red.; SIMONOV, N.J., doktor fiz.-mat. nauk, red.; ULANOV, G.M., doktor tekhn. nauk, red.; FEDOROV, S.M., kand. tekhn. nauk, red.; TSYPKIN, Ya.Z., doktor tekhn. nauk, red.; CHINAYEV, P.I., kand. tekhn. nauk, red.; KRUTOVA, I.N., kand. tekhn. nauk, red.; RUTKOVSKIY, V.Yu., kand. tekhn. nauk, red.

[Invariancy theory in automatic control systems; transactions] Teoriia invariantnosti v sistemakh avtomaticheskogo upravleniya; trudy. Moskva, Nauka, 1964. 503 p.
(MIRA 18:2)

1. Vsesoyuznoye soveshchaniye po teorii invariantnosti i
yeje primeneniyu v avtomaticheskikh ustroystvakh. 2d,
Kiev, 1962. 2. Chlen-korrespondent AN Ukr.SSR (for
Ivakhnenco, Kukhtenko).

FEFICHOV, F.M. (Leningrad)

Dynamics of discrete-type automatic control systems containing
conservative or oscillatory links. Iss. in USSR. Tekh. Kib.
no.5491-73 S-2 '64. (MERA 17:12)

L 02016-67

ACC NR: A45004838

Monograph

UR/

51
B41Fedorov, Stephan Mikhaylovich; Litvinov, Anatoliy Pavlovich

Automatic control systems with digital computers; theory and design (Avtomatičeskiye sistemy s tsifrovymi upravlyayushchimi mashinami; teoriya i proyektirovaniye) Moscow, Izd-vo Energiya, 65. 0222 p. illus., bibliog. 10,550 copies printed.

TOPIC TAGS: automatic control system, digital system, linear approximation, non-linear automatic control system

PURPOSE AND COVERAGE: This book gives the principles of the theory of digital systems of automatic control with linear approximation and with calculation of the influence of the effect, their equation and transmission functions and methods of estimation and means of experimental study. This book is recommended for a wide group of specialists in automatic control.

TABLE OF CONTENTS (abridged):

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Ch. II. Mathematic apparatus for analyzing digital automatic systems	--18
Ch. III. Effects of quantization by time on the dynamics of digital automatic systems	--61

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UDC: 62-5

L 02016-57

ACC NR: AM6004838

- Ch. IV. Synthesis of digital automatic systems by the method of logarithmic frequency characteristics --116
Ch. V. Effect of quantization by level on the dynamics of digital automatic systems --159
Ch. VI. Means of the correction of dynamic characteristics of digital automatic systems --175
Ch. VII. Methods of experimental analysis of digital automatic systems --215
Bibliography --221

SUB CODE: 09 / SUBM DATE: 17 Jun 65 / ORIG REF: 049 / ORG RIF: 002

ns
Card 2/2

FEDOROV, S.N.; KUNIN, L.L.; SACHKOVA, L.M.

Effect of the structural factor on the diffusion of hydrogen in the
alloy Fe - Ni - Mn. Trudy kom.anal.khim. 10:46-48 '60.
(MIRA 13:8)

1. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy
metallurgii, Moskva.
(Iron-nickel-manganese alloys)
(Diffusion)
(Hydrogen)

YUDOVICH

Wedging-in syndrome in spinal tumors. Vop.neurokhir, 21 no.3:32-36
My-Jo '57.

(MLRA 10:10)

1. Nauchno-issledovatel'skiy ordena Trudovogo Krasnogo Znameni
institut neurokhirurgii imeni akad. N.N.Burdenko Akademii meditsinskikh nauk SSSR.

(SPINAL CORD, neoplasms

compl., wedging-in synd. caused by spinal puncture)

(SPINAL PUNCTURE, compl.

wedging-in synd. spinal tumors)

FEDOROV, S. N.

PLATE I. ROCK SPHERULETTE

四百一

zadání zákonů říše. Bratislava po analitického kritického

Larson, Inc., Trust, Vol. 10. Printed and bound in colored paper. 4,000 copies printed.

MEET THE AUTHOR

Tech. Ed., V.T. Inst.

PURPOSE. This book is intended for laboratory personnel concerned with gas analysis in metals.

SCOTT: This collection

generalized. This collection of articles is based on material of the conference on Analytical Chemistry as it applies to problems dealing with all aspects of the subject. The articles present data on: 1) The vacuum distillation method, developed by organic chemists and their service scientists; 2) Chromatography and ultracentrifugation for the analysis of gases in steam and water, and applicable to analyses of gases in other media; 3) The research of J. M. Purdon and co-workers on the facilities of chromatography and analytical chemistry; 4) A summary as to TGA. However making it possible to evaluate the practicability and field of application of the different analytical methods; 5) The contributions of Drs. Kraschikoff and coworkers in their study of thermogravimetric methods for resolution of volatile products from carbonaceous materials; 6) The estimation of gases in water by the sulfide method developed by Drs. Bahr and Hahn; 7) The spectrometric method for the determination of nitrogen as ammonia by Drs. Zeldin and coworkers. The authors of these articles represent well and critically the various analytical methods, describe the apparatus used in fundamental sections, the best trends of research, and express concisely all of the articles.

תְּמִימָנָה וְתַּחֲזִיקָה בְּעֵדָה וְבְּמִזְמֹרֶת וְבְּמִזְמֹרֶת

II. 亂世の政治と思想

H. PERIODS OF GAS BALANCE IN METALS

प्राचीन भारतीय विज्ञान एवं तकनीक

FORMALISATION AND INSTITUTIONALISATION OF CONCERN WITH THE ENVIRONMENT

Determining Classes in Periodic Lattices by the Groups of the Periodic System of Elements

הוּא בְּנֵי יִשְׂרָאֵל וְעַמּוֹד אֲלֵיכֶם כְּבָנָיו

Vocal clarity [and *V.L.*] *Termed by* *in case*, *Macar*. *Determination of*

प्राचीन भारतीय संस्कृति

Werner, H.J., T.L. Mathews, and R.M. Narins. Determination of dry-

K. E. K. M. and Z. N. Patterson [Institute of Geodynamics and Isotope

प्राचीन अवधि के दृष्टिकोण से यह विषय अत्यधिक महत्वपूर्ण है।

REVIEWS 115

Institute of Gerontology and Adult Health Research *and* **Health Policy**: The Techno-Public Method With the Use of a Platform Both

The Preparation of Gas in Water

EXPERIMENTAL. Methods of Preparing Analytical Samples of Urine

卷之三

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

FEDOROV, S.N., ^aand Med Sci--(diss) "The papilla of the optic nerve and the blind spot in ~~the~~ diseases of the central nervous system." Rostov-on-Don, 1958. 11 pp (Rostov-on-Don State Med Inst), 200 copies (KL, 26-53,118)

- 171 -

PLEVAKO, N.S.; YEDOROV, S.N.

Use of vertebral angiography [with summary in English, p.54].
Vop.neurokhir. 22 no.6:15-17 N-D '58. (MIRA 12:2)

1. Nauchno-issledovatel'skiy ordena Trudovogo Krasnogo Znameni
institut neurokhirurgii imeni akad. N.N. Burdenko AMN SSSR.
(ANGIOGRAPHY,
vertebral arteriography in brain dis. (Rus))
(BRAIN, diseases,
diag. vertebral arteriography (Rus))

FEDOROV, S.N. (Moskva)

Diagnostic value of vertebral angiography in tumors of the 8th
cranial nerve. Vop.neirokhir. 25 no.2:40-45 Mr-Ap '61.
(MIRA 14:6)

1. Nauchno-issledovatel'skiy ordena Trudovogo Krasnogo Znameni
institut neurokhirurgii imeni akad. N.N. Burdenko AMN SSSR.
(ACOUSTIC NERVE—TUMORS)

UGRYUMOV, V. M., prof.; KONOVALOV, Yu. V., prof.; SPIRIN, B. G., kand.
med. nauk; IVANOV-DIATLOV, F. G., kand. med. nauk.; MESHCHERIAKOV^A,
A. V.; MIKHEYEVA, Ye. V., kand. med. nauk; FEDOROV, S. N.;
SHVORNEVA, V. Z.; D'YAKONOV, V. Ye. (Moskva)

Disorders of respiration and their treatment in tumors of the brain.
Vop. neirokhir. no. 6:46-50 '61. (MIRA 14:12)

(BRAIN—TUMORS) (RESPIRATION)

FEDOROV, S.N., kand.med.nauk

Preliminary results of the implantation into the eye of an
artificial lens made from Soviet plastic. Oft. zhur. 17 no.1:
19-24 '62. (MIRA 15:3)

1. Iz filiala Instituta glaznykh bolezney imeni Gel'mgol'tsa
2. Chaboksary (rukovoditel' - prof. T.I. Yeroshevskiy, Kuybyshev).
(CRYSTALLINE LENS—SURGERY)

YEGOROV, B.G.; KORNYANSKIY, G.P.; KANDEL', E.I.; SALALYKIN, V.I.; FEDOEV, S.N.
(Moskva)

Use of urea in neurosurgical clinical practice. Vop. Neirokhir.
27 m.1:1-7 Ja-F '63. (MIRA 16:5)

1. Nauchno-issledovatel'skiy ordena Trudovogo Krasnogo Znameni
Institut neurokhirurgii imeni N.N. Burdenko, AMN SSSR
(BRAIN—DISEASES) (EDEMA)

YEGOROV, B.G., prof.; SALALYKIN, V.I.; FEDOROV, S.N. (Moskva)

Anesthesia in neurosurgery, Vop. neirokhir. no. 3:4-8 My-Je '63.
(MIRA 17:9)

1. Nauchno-issledovatel'skiy ordena Trudovogo Kraanogo Znameni
institut neyrokhirurgii imeni akademika N.N.Burdenko AMN SSSR
(dir. - prof. B.G.Yegorov).

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CIA-RDP86-00513R000412630003-2

FEDOROV, S. P.
A.C.S.

Equipment + apparatus

Device for feeding granular materials from a hopper onto
a conveyor. S. P. Fedorov. Russ. 07,138. May 31,
1940. Siz. 11. M.I.O.

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

KLYACHKO, Yu.A.; KUNIN, L.L.; FEDOROV, S.P.; LARIONOV, I.N.

Study of the interaction between gases and metals. Trud: kom.anal.
khim. 10:49-70 '60. (MIRA 13:8)

1. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy
metallurgii, Moskva.
(Metals) (Hydrogen) (Diffusion)

POPOV, S.I., inzh.; FEDOROV, S.P., inzh.

Experience in the construction and installation of closed water disposal conduits from standardized precast reinforced concrete elements in the "Lithuanian State Regional Electric Power Plant." Energ. stroi. no.31:12-17 '62.

1. Rizhskoye otdeleniye Vsesoyuznogo gosudarstvennogo projekt-nogo instituta stroitel'stva elektrostantsiy.
(Precast concrete construction)
(Lithuania—Electric power plants)

(MIRA 16:7)

"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2

2/25/4

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

FEDOROV, S.S.

H.

CHINA/Laboratory Equipment - Instruments, Their Theory,
Construction and Application.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 19801

Author : S.S. Fedorov.

Inst :
Title : Installation for Determination of Specific Gravity of
Powdery Substances.

Orig Pub : Khuasyue shitsaze, 1956, No 5, 274-276.
For translation see RZhKhim, 1956, 29485.

Abstract : No abstract.

Card 1/1

- 15 -

OSU-A 9

FEDOROV, S.S.

Issledovaniye Gruntov Baikal'skogo
Ozera - Investigation of the shore-line of Lake Baykal.
Izvestiya Biologo-Geograficheskogo Nauchno-Issledovatel'skogo
Instituta pri Gosudarstvennom Irkutskom Universitete, Vol. 6, parts 2-4, 1935, pp. 152-167
Ohio State Univ. Library, Columbus, Ohio.

Q60-I68, vol. 6, no. 2-4

Russian text, no abstract. No bibliography,
Geographic investigations in bays Barguzinskiy and
Chivyrkuyskiy of Lake Baikal. Maps of these bays on
scale 1:250,000, covering regions Barguzinsky Bay:
long. $108^{\circ}30'$ - $109^{\circ}00'$ E; lat. $53^{\circ}10'$ - $53^{\circ}40'$ N.
Chivyrkuyskiy Bay: long. $108^{\circ}55'$ - $109^{\circ}20'$ E; lat. $53^{\circ}30'$ - $53^{\circ}55'$ N.

(64)

FEDOROV, S.S.

Distribution and migration of younger and medium year classes of
the Atlanto-Scandinavian herring. Trudy sov. Ikht. kom. no.10:66-72
'60. (MIRA 13:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut morskogo rybnogo
khozyaystva i okeanografii (VNIRO).
(Norwegian Sea--Herring) (Fishes--Migration)

FEDOROV, S.S.

Characteristics of the distribution of Atlantic-Scandinavian
herring in fall in winter. Vop. ikht. no.15:28-32 '60.
(MIRA 13:9)

1. Polyarnyy nauchno-isslovatel'skiy institut morskogo rybnogo
khozyaystva i okeanografii im. N.M. Knipovicha (PINRO).
(Norwegian Sea-Herring)

FEDOROV, Stanislav Sergeyevich; KAMENSKAYA, Ye.A., red.
POLUYEKHINA, N.I., tekhn. red.

[Atlantic and Scandinavian herring and its distribution]
Atlantichesko-skandinavskie sel'di i ikh raspredelenie.
Moskva, Izd-vo "Rybnoe khozaiistvo", 1962. 62 p.
(MIRA 17:4)

SAVUSHKIN, A.T.; FEDOROV, S.T.; agronom po sevooborotam; RATNIKOV, A.M.,
agronom

"Crop rotations in the non-Chernozem zone" by I.A. TSivenko.
Reviewed by A.I. Savushkin, S.T. Fedorov and A.M. Ratnikov.
Zemledelie 23 no.23:95-96 Mr '61. (MIRA 14:3)

1. Glavnny agronom Tul'skogo oblesel'khozupravleniya.
(Rotation of crops)
(TSivenko, I.A.)

"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2

FEDOROV, S. V.

KORNVENTO (Koneva), Z.P. (Candidate of Veterinary Sciences)

FEDOROV, S. V. (Parasitology Department, Turkmen Veterinary Experimental Station).

Treatment of hemcsporidioses of sheep with novoplasmine (LP4).

Source: Veterinariya; 4-5; April/May 1945 uncl

TARCON

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

BUBLIKOV, Ye.V., inzh.; ZELINSKIY, V.M., kand.tekhn.nauk; FEDOROV, S.V.,
starshiy nauchnyy sotrudnik; BUNYAYEVA, A.I., tekhnik; TELEPNEV,
D.Ya., starshiy nauchnyy sotrudnik; RATS, A.F., inzh.; BERKOVICH,
M.A., inzh., glavnyy konstruktor; ZVORYKINA, L.N., red.izd-va;
LOMILINA, L.N., tekhn.red.

[Low-speed winches for mining] Prokhodchenskie tikhokhodnye lebedki.
Moskva, Ugletekhnizdat, 1959. 7 p. (MIRA 12:10)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut organi-
zatsii i mekhanizatsii shakhtnogo stroitel'stva. 2. Ukrainskiy
nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii
shakhtnogo stroitel'stva (for Bublikov, Zelinskiy, Fedorov,
Bunyayeva, Telepnev). 3. Tsentral'nyy nauchno-issledovatel'skiy
i proyektno-konstruktorskii institut podzemnogo i shakhtnogo stroi-
tel'stva (for Rats, Berkovich). 4. Nachal'nik sektora Ukrainskogo
nauchno-issledovatel'skogo instituta organizatsii i mekhanizatsii
shakhtnogo stroitel'stva (for Bublikov). 5. Nachal'nik Otdela gornoj
elektromekhaniki Ukrainskogo nauchno-issledovat.instituta organizatsii
i mekhanizatsii shakhtnogo stroitel'stva (for Zelinskiy). 6. Nachal'-
nik Otdela gornoj elektromekhaniki Tsentral'nogo nauchno-issledovatel'-
skogo i proyektno-konstruktorskogo instituta podzemnogo i shakhtnogo
stroitel'stva (for Rats).

(Winches) (Mining machinery)

BUBLIKOV, Yevgeniy Vladimirovich, inzh.; DOKUKIN, Oleg Semenovich, inzh.; TELEPNEV, Dmitriy Iakovlevich, inzh.; FEDOROV, Georgiy Dmitriyevich, inzh.; FEDOROV, Sergey Vasil'yevich, inzh.; KOSTON'YAN, A.Ya., otv.red.; SABITOV, A., tekhn.red.

[Hoisting equipment in mine building] Podzemnye ustavovki v shakhtnom stroitel'stve. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1960. 258 p. (MIRA 13:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva (UkrNIOMShS) (for all, except Koston'yan, Sabitov).
(Mine hoisting--Equipment and supplies)

"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2

FEDOROV, S.V.; SOKOLOV, A.D.; SHCHERBAKOV, N.S.

Instrument for determining the content of magnetic inclusions in
nonmagnetic materials. (Magnetic analyser of the MA-1 type). Plast.
massy no.8:63-64 '60. (MIRA 13:10)
(Materials--Analysis) (Magnetic materials)

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

PANOVA, N.M.; SOKOLOV, A.D.; TIMOFEEV, A.V.; FEDOROV, S.V.

Effect of the quality of mummy on the dielectric strength of
molding powders. Plast. massy no.12:62-64 '60. (MIRA 13:12)
(Plastics--Electric properties) (Pigments)

FEDOROV, T.; LYUBIMOV, N.N., prof., ovt. red.; FILIPPOVA, E., red.
izd-va; LEBEDEV, A., tekhn. red.

[Finances and credit of the Sudan] Finansy i kredit Sudana.
Moskva, Gosfinizdat, 1962. 119 p. (MIRA 15:3)
(Sudan—Finance)

"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2

KOLPAKOV, L.G.; SAFRONOV, V.Ya.; LOPATIN, G.K.; FEDOROV, T.A.; YERONEN, V.I.

Possibility of using glandless pumps for pipelines. Trudy NIITrans-neft' no.3:107-113 '64.
(MIRA 18:2)

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2"

FEDDROV, T. F.

PHASE I BOOK EXPLOITATION SOV/5747

Vsesoyuznoye soveshchaniye po redkim shchelochnym elementam. 1st,
Novosibirsk, 1958.

Redkiye shchelochnyye elementy; sbornik dokladov soveshchaniya po
khimii, tekhnologii i analiticheskoy khimii redkikh shchelochnykh
elementov, 27-31 yanvarya 1958 g. (Rare Alkali Elements; Col-
lection of Reports of the Conference on the Chemistry, Technology,
and Analytical Chemistry of Rare Alkali Elements, Held 27-31
January, 1958) Novosibirsk, Izd-vo Sibirskogo otd. AN SSSR, 1960.
99 p. 1000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Sibirskoye otdeleniye.
Khimiko-metallurgicheskiy institut.

Resp. Ed.: T. V. Zabolotskiy, Candidate of Technical Sciences;
Members of Editorial Board: A. S. Mikulinskiy, Professor, Doctor
of Technical Sciences, A. T. Logvinenko, Candidate of Technical
Sciences, F. F. Barkova, Candidate of Chemical Sciences; Ed.:
V. M. Bushuyeva; Tech. Ed.: A. F. Mazurova.

Card 1/5

Rare Alkali Elements; Collection (Cont.)

SOV/5747

PURPOSE : This book is intended for chemical engineers and technicians working in metallurgical and mining operations and related enterprises.

COVERAGE: The collection contains reports which deal with the physical and analytical chemistry of rare alkali elements and their compounds and their reactions with mineral ores and salts. Methods of extraction and modern analytical techniques and equipment are also discussed. No personalities are mentioned. References accompany individual articles.

TABLE OF CONTENTS:

Urazov, G. G. [Deceased], V. V. Plyushchev, Yu. P. Simakov, and I. V. Shakhno. [Moskovskiy institut tonkoy khimicheskoy tekhnologii im. (M.V.) Lomonosova - Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov]. High-Temperature Modification of Spodumene 5

Plyushchev, V. Ye. [Moscow Institute of Fine Chemical Technology

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Rare Alkali Elements; Collection (Cont.) SOV/5747

of Sciences USSR]. Binding Building Material From Industrial Wastes 51

Poluektov, N. S., and M. P. Nikonova. [Institut obshchey i neorganicheskoy khimii AN Ukrainskoy SSR - Institute of General and Inorganic Chemistry of the Academy of Sciences Ukrainskaya SSR]. Use of Photometry-of-Flame Methods in Analyzing Ores and Salts of Rare Alkali Metals 63

Zak, B. M. [Irkutskiy institut redkikh metallov - Irkutsk Institute of Rare Metals]. Methods of Determining Rare Elements 71

Zakhariya, N. F., and Ts. A. Leyderman. [Institut obshchey i neorganicheskoy khimii AN SSSR - Institute of General and Inorganic Chemistry of the Academy of Sciences USSR]. Methods of Quantitative Spectral Determination of Rare Alkali Metals in Ores and Evaluation of the Impurity Content in Ore Preparations 75

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• Rare Alkali Elements; Collection (Cont.)

SOV/5747

Kozlov, A. S. [Khimicheskiy fakul'tet Moskovskogo gosudarstven-nogo universiteta - Chemistry Department of Moscow State University]. A New (Turbidimetric) Method of Determining Small Amounts of Cesium With the Aid of Cesium and Cadmium Ferrocyanides 79

Galkina, N. K., and M. M. Senyavin. [Institut geokhimi i analiticheskoy khimii AN SSSR - Institute of Geochemistry and Analytical Chemistry of the Academy of Sciences USSR] Chromatographic Separation of Mixtures of Alkali Metals 87

Zabrodin, N. I., A. A. Nechayeva, and T. V. Korobochkina. [Vsesoyuznyy nauchno-issledovatel'skiy institut galurgii - All-Union Scientific Research Institute of Metallurgy]. The Content of Rare Alkali Elements in Natural Salts of the Soviet Union and Prospects of Its Utilization in Industry 97

AVAILABLE: Library of Congress (QD 172.A4v8)

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JA/rsm/jw
11-27-61

FEDOROV, T. F.

TAKS i SOCIETY

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FEDOROV, T.F.

PAGE 1 DOCUMENT EXPERTISATION

SERIAL NO. 559
REV/12-4-5

Akademie nach DDR. Institut metallurgii
Metallurgisch-metallodynamisch, fachber-technische und wissenschaftliche
(Praktische) Research Methods in Metallurgy and Metal Science), Moscow,
Volume 14 (1981), 253 p. (Berlin: Verlag Technik, pp. 5.) Erste Aufl.
Reprinted, 1980, reprint period.

Sponsoring Agency: Akademie nach DDR. Institut metallurgii und A.A. Bayern.

Bapt. 24, 13, Berlin, Academia (Dessau); Ed. of Publishing House

V.A. Kluwer, Tech. Ed.; T.P. Polomarev.

REMARK: This collection of articles is intended for metallurgists and

researchers.

CONTENTS: The collection contains articles on metallurgy, metal science, and experimental research methods. Separate articles discuss the effect of various factors and properties of new metals and alloys. The effect of cold treatment and inclusion on the properties of alloys are analyzed. And increments and solidification paths and the diffusion system.

Svetlichny, Yu. N. and V. P. Razum. Study of the Structure and of the Physicochemical Properties of Multicomponent Metallic Alloys

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Smirnov, N. G., E. V. Kuznetsov, and T. P. Polomarev. Study of the Electrical Properties of the Si-Al Alloy

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Slobodcikov, I. V. Study of the Process of Continuous Secondary Electron

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Stagnarization as a Single-Channel Multiplier

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Golikovskiy, R. B. Simple Method for the Determination of Iron in Alloys

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Rozhdestvenskiy, V. V. and A.V. Arshilova. Determination of Metallic Magnesium

201

Khantsevich, V. A. and V. G. Gartnerov. Polarography of Large Quantities of Calcium

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Yagodin, D. V. Practical Methods and Apparatus for Studying the Processes

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Kondratenko, Yu. N. On the Use of Mass Spectrometric Methods of Analysis

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Orlova, V. L. Mechanical Principles of Surface Processing

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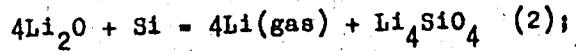
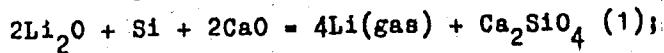
S/081/62/000/004/003/087
B149/B101

AUTHORS: Shamray F. I., Fedorov T. F.

TITLE: The thermodynamics of the vacuum-thermal method of preparing lithium

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 51, abstract 4B337 (Sb. "Redk. shchelochn. elementy". Novosibirsk, Sib. otd. AN SSSR, 1960, 25-29)

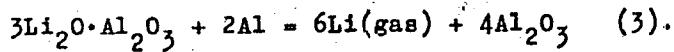
TEXT: The effusion method was used to study the equilibria in silicon-thermal reduction of lithium oxide in the presence and in the absence of calcium oxide and in alumo-thermal reduction of lithium aluminate. Mineralogical analysis of briquet scraps showed that the following reactions took place during the reduction:



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S/081/62/000/004/003/087

The thermodynamics of the vacuum-thermal ... B149/B101



The experimental data were used to calculate the equations for the dependence of the isobar potential on the temperature for reactions (1), (2), and (3).

$$\Delta Z_T = -209900 + 70.8T; 167000 - 115.6T; 312820 - 129.75 T.$$

The values of the isobar potentials of the entropy and enthalpy for the formation of lithium oxide, lithium orthosilicate and lithium aluminate were calculated from these data. [Abstracter's note: Complete translation.]

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18-3000 1087 7458-1521

86697
S/180/60/000/006/007/030
E193/E335

AUTHORS: Fedorov, T.F. and Shamray, F.I.

TITLE: Refining of Metallic Lithium

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye
tekhnicheskikh nauk, Metallurgiya i toplivo,
1960, No. 6, pp. 56 - 60

TEXT: Having derived an expression describing the variation of the composition of the liquid and vapour phases of an ideal liquid solution during the distillation process, the present authors used it to construct theoretical curves which, for the case of lithium containing its chief impurities, illustrate how the composition of the residue and condensate should vary in relation to the ratio between the weight of the condensate (and residue) and the initial weight of the metal distilled. These theoretical predictions were checked experimentally on lithium containing 0.6% sodium and 0.04% potassium. In the first series of experiments simple distillation was studied under various conditions of temperature, partial pressure of sodium and vacuum employed. The results were disappointing in that,

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36697
S/180/60/000/006/007/030
E193/E335

Refining of Metallic Lithium

irrespective of the conditions employed, it was found impossible to reduce the content of the impurities below 0.1%. In the next series of experiments, distillation with fractional condensation in a horizontal column was employed. Vacuum of

$5 \text{ to } 6 \times 10^{-4}$ mm Hg was used and the distillation process was carried out at 700-800 °C. Under these conditions the fraction condensed at 300-400 °C contained less than 0.01% sodium and potassium. However, no reduction in the manganese content was attained by this method. Best results were obtained when distillation was carried out in a bubble-cap plate fractionating column. This method reduced the impurity content in the starting material to less than 0.01%. There are 3 figures, 7 tables and 7 references: 6 Soviet and 1 non-Soviet.

SUBMITTED: April 1, 1960

Card 2/2

183100 1087

32781
S/137/61/000/012/031/149
A005/A101 .

AUTHORS: Shamray, F.I., Fedorov, T.F.

TITLE: Thermodynamics of a vacuum-thermal method for obtaining lithium

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 16, abstract
120113 (V sb. "Redk. shchelochn. elementy", Novosibirsk, Sib. otd.
AN SSSR, 1960, 25 - 29)

TEXT: The authors studied the equilibrium of a reaction for the silico-thermal reduction of Li_2O in the presence of CaO and the alumino-thermal reduction of Li aluminate. As the systems indicated are single-variant ones, their investigation could be reduced to the measurement of Li vapor pressure over the reaction mixture. The pressure was investigated in a container of limited dimension with a calibrated aperture. The container was placed in a deep-vacuum space. Isobaric potential values were obtained depending on the temperature, for reactions: $2 \text{Li}_2\text{O} + 2\text{CaO} + \text{Si} = 4 \text{Li}_{\text{gas}} + \text{Ca}_2\text{SiO}_4$; $4 \text{Li}_2\text{O} + \text{Si} = 4 \text{Li}_{\text{gas}}$ = $= \text{Li}_4\text{SiO}_4$; $3 \text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3 + 2 \text{Al} = 6 \text{Li}_{\text{gas}} + 4 \text{Al}_2\text{O}_3$; $2 \text{Li}_{\text{gas}} + \frac{1}{2} \text{O}_2 = \text{Li}_2\text{O}$.

Card 1/2

32781

8/13/61/000/012/031/149
A006/A101

Thermodynamics ...

$2 \text{Li}_2\text{O} + \text{SiO}_2 = \text{Li}_4\text{SiO}_4$; $\text{Li}_2\text{O} + \text{Al}_2\text{O}_3 = \text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3$. Entropy and enthalpy values for Li_2O , Li_4SiO_4 and $\text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3$ were also obtained.

L. Vorob'yeva

[Abstracter's note: Complete translation]

Card 2/2.

5.2400(A)

68120
SOW/78-5-1-39/45

5(2)

AUTHORS: Fedorov, T. F., Shamray, F. I., Nisel'son, L. A.,
Petrusevich, I. V.

TITLE: On the Production of Elementary Boron

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol 5, Nr 1,
pp 226-228 (USSR)

ABSTRACT: After giving a survey of publications with reference to a paper by F. I. Shamray and V. I. Mikheyev (Ref 6), the authors mention that commercial boron has a purity of about 90%. Boron with a higher degree of purity (99%) is produced only in small quantities. The authors attempted to obtain pure boron by reducing BCl_3 with Zn. Thermodynamic investigation of this reaction (Table, Fig 1) indicates that it may be carried out within a wide temperature range. As boron chloride reacts slowly even with liquid zinc, Zn was evaporated in a device schematically represented in figure 2. The reaction took place in a quartz tube heated to 1000°. It was stopped as soon as the tube was completely filled with the reaction products (Figs 3,4). The latter were decomposed into B, Zn, and $ZnCl_2$ in quartz

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68120
SOV/78-5-1-39/45

On the Production of Elementary Boron

ampoules by distillation at 1000°. The boron, the purity of which is not given, contained impurities of Fe, Mn, Zn, Al, and Si. There are 4 figures, 1 table, and 16 references, 3 of which are Soviet.

SUBMITTED: May 31, 1959

Card 2/2

8/226/62/000/006/006/016
E193/E383

AUTHORS: Fedorov, T.F., Nedumov, N.A., Polyakova, M.D. and
Shampay, F.I.

TITLE: Some data on the ternary titanium-boron-chromium
system

PERIODICAL: Poroshkovaya metalurgiya, no. 6, 1962, 42 - 49

TEXT: The object of the present investigation was to study the constituents of the Cr-B and Ti-B-Cr systems. In the first stage of the investigation, thermal and metallographic analysis as well as hardness and microhardness measurements, conducted on Cr-B alloys with up to 40 at.% B, cooled slowly to room temperature or quenched from 1450 °C, were used to construct the Cr end of the constitution diagram of the Cr-B system. In the second stage, the same experimental technique and, in some cases, X-ray diffraction analysis, were used to study the Ti-B-Cr system. The experimental alloys included the following: some binary Ti-B, B-Cr and Ti-Cr alloys; alloys of the pseudo-binary TiB_2 -CrB, TiB_2 - CrB_2 , $TiCr_2$ -CrB, $Ti-CrB_2$, $Ti-Cr_5B_3$, and Cr- TiB_2 systems;

Card 1/2

Some data on

S/226/62/000/006/006/016
E193/E383

alloys defined by sections parallel to the Cr-B side of the ternary system at 3, 10, 15, 25, 35 and 45% Ti. The results obtained were insufficient to construct a complete constitution diagram of the system studied. It was established, however, that the single-phase fields constituted only a small proportion of the isothermal section of the system at room temperature. These fields correspond to solid solutions based on Ti, Cr and B and on some binary and, possibly, ternary intermetallic compounds. In addition, TiB_2 and CrB_2 form a continuous series of solid solutions. There are 7 figures.

ASSOCIATION: Institut metallurgii im. A.A. Baykova AN SSSR
(Institute of Metallurgy im. A.A. Baykov, AS USSR)

SUBMITTED: April 14, 1962

Card 2/2

37847

S/080/62/035/005/002/015
D204/D307

5.2410
AUTHORS: Nisel'son, L. A., Petrusevich, I. V., Shamray, F. I.
and Fedorov, T. F.

TITLE: Preparation of elemental boron by reduction of its
halides with hydrogen

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, 1962, 984-989

TEXT: The present work was carried out to supplement existing data on the preparation of elemental B. Purified BCl_3 , BBr_3 , BI_3 and H_2 were used under anhydrous conditions. The reactor consisted of a quartz tube enclosing a pair of Mo electrodes connected by a Ta wire 100 x 8 x 0.10 mm, on which the B was deposited. Temperatures were varied from 800 to 1400°C and the molar $(\text{BX}_3):(\text{H}_2)$ ratios, (n), were made 1:3-25. The interactions took place over 1.7 - 8 hours. The rate of B deposition increased rapidly with temperature and tended to be higher for lower n. For BBr_3/H_2 mixtures the

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S/080/62/035/005/002/015
D204/D307

Preparation of elemental ...

yields of B increased linearly from ~3% at 800°C to ~50% at 1300°C, almost independently of n. For a given temperature the rate of B deposition increased in the order $\text{BCl}_3 < \text{BBr}_3 < \text{BI}_3$. Between 800 and 900°C brown, friable deposits of amorphous B were obtained for all n studied, from BBr_3/H_2 mixtures. At higher temperatures and n, black, "graphite" B was produced, and "metallic" crystalline boron formed at and above 1200°C with 3 or less moles H_2 /mole BBr_3 . Similar regions of formation of each form of B are believed to exist for $\text{BCl}_3\text{-H}_2$ and $\text{BI}_3\text{-H}_2$ systems. There are 6 figures and 1 table.

SUBMITTED: January 25, 1961

Card 2/2

ACCESSION NR: AP4017725

8/0294/63/001/003/0449/0455

AUTHORS: Fedorov, T. F.; Gladyshevskiy, Ye. I.

TITLE: Interaction of transition metals of groups 4, 5, and 6 of the periodic system with carbon

SOURCE: Teplofizika vyssokikh temperatur, v. 1, no. 3, 1963, 449-455

TOPIC TAGS: carbide, transition metal, titanium zirconium, hafnium vanadium, niobium, tantalum, chromium, molybdenum, tungsten, group 4 metal, group 5 metal, group 6 metal, atomic radius, binary system, ternary system, quaternary system, carbide structure, solid solution, crystal structure, thermodynamic properties

ABSTRACT: Binary, ternary, and quaternary systems whose components are Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, and W with carbon are considered on the basis of published data and research carried out by the authors. Tables listing the various structures of carbides of these

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ACCESSION NR: AP4017725

metals and solid solutions of carbides of these metals (both continuous and limited) are presented. Phase equilibrium states of ternary systems of the metals of these groups and carbon are also given. All the data show that the phase equilibria in the systems of transition metals of groups 4--6 and carbon, with three and more components, are due to the crystal structures and thermodynamic properties of the carbides produced in the metal-carbon binary systems, and also to interactions of the transition metals with one another (primarily their mutual solubility). The ratio of the dimensions of the atoms plays a major role in the properties of the systems. In view of the similar chemical properties of the transition metals of groups 4--6, carbon-containing ternary systems and systems with more components have low probability, with the exception of systems in which one of the components is vanadium or chromium, whose atomic radii are the smallest. Orig. art. has: 2 figures and 3 tables.

Card 2/3

ACCESSION NR: AP4017725

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Metallurgy Institute); L'vovskiy universitet im. Iv. Franko (L'vov University)

SUBMITTED: 17May63

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: ML, PH

NR REF Sov: 010

OTHER: 024

Card 3/3

USSR

ACCESSION NR: AP3008399

S/0286/63/000/014/0054/0054

AUTHOR: Fedorov, T. F.; Shamray, F. I.

TITLE: A method of obtaining lithium of high purity and an apparatus for accomplishing this method, Patent No. 155934 (650481/22), Class C 22b; 40a, 47 sub 01

SOURCE: Byulleten' izobret. i tovarn. znakov, no. 14, 1963, 54

TOPIC TAGS: lithium, lithium refining

ABSTRACT: 1. A method of obtaining lithium of high purity, distinguished by the fact that for a more thorough purification of the lithium and to increase the capacity of the apparatus, it is accomplished by means of continuous fractionation, with bubbling, at a temperature of 900-1200°C, which corresponds to a lithium vapor pressure of 15-200 mm Hg. 2. A device for accomplishing this method as explained in paragraph 1, made in the form of a fractionating column with multi-layer walls, equipped with bubblers and closing devices for continuous introduction and withdrawal of the metal, distinguished by the fact that to increase the reliability of the column and improve the hermetic sealing.

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ENCLOSURE: 01

its wall is made of three layers: the outer of "Armko" steel, the middle of heat-resistant steel, and the inner one of refractory material, and between the first and second layers a vacuum is created, and between the second and third an inert gas, such as argon, is introduced.

ASSOCIATION: none

SUBMITTED: 14Jan60

DATE ACQ: 29Oct63

ENCL: 01

SUB CODE: EL, ML

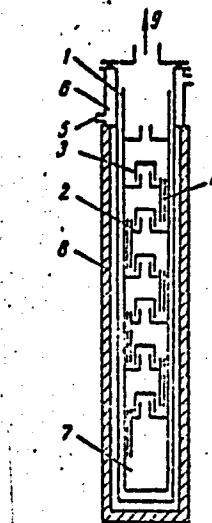
NO REF SOV: 000

OTHER: 000

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ACCESSION NR: AP3008399

ENCLOSURE: 01



- 1) Fractionation column;
- 2) bubbler;
- 3) hood;
- 4) tubes;
- 5) dephlegmator;
- 6) cooler;
- 7) vat;
- 8) heaters;
- 9) vacuum system.

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L 14955-63

EWP(q)/EMT(m)/RDS AFFTC/ASD JD/HM-2/JG

ACCESSION NR: AP3004356

5/06/86/63/008/008/1997/1998

62
62

AUTHOR: Gladyshevskiy, Ye. I.; Popova, N. M.; Fedorov, T. F.

TITLE: Mutual solubility of zirconium, niobium, and hafnium carbides.

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 8, 1963, 1997-1998

TOPIC TAGS: zirconium carbide-niobium carbide-hafnium carbide mutual solubility, phase composition, crystal lattice, lattice parameter, alloy microstructure, zirconium carbide, niobium carbide, hafnium carbide, zirconium carbide-niobium carbide-hafnium carbide system, mutual solubility, zirconium carbide-niobium carbide-hafnium carbide alloy

ABSTRACT: The mutual solubility of components of the ternary ZrC-NbC-HfC system has been investigated. Alloys were prepared by melting of sintered compacts in an unconsumable-electrode arc furnace in an argon atmosphere and annealing in vacuum at 2000°C for 50 hr. The x-ray diffraction analysis showed that all three components have unlimited mutual solubility. The lattice parameter increases continuously with increasing content ZrC and HfC (see Table 1 and Fig. 1 of Enclosures). Orig. art. has: 3 figures and 1 table.

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L 24800-65 EWT(a)/EWP(b)/T/EWP(t) IJP(c)/68D/AFWL/ASD(a)-3 JD/JG/MLK
S/0000/S4/000/000/000/000/000

III. B. Comments on the Cr-B phase diagram

• CCCP Institut metallurgii Issledovaniya metallicheskikh sistem
• Research Institute of Metallurgy

• ASK diagram chromium boron system
prevention transformation, annealing

The authors discuss papers on the Cr-B system by different people
and experiments in detail.

**2% B form a new phase which should not be considered as Cr or simply a solid
solution Cr + 2% B. The micrograph of an alloy with 2% B shows a new phase
which with 34, 33, 3, 32 and 30% B have a similar structure and composition
but close to it. A CrB compound was identified in a few cases.**

TYPE AT 4046006

The structure of an alloy with 66% B clearly testifies to the presence of an CrB₂ compound. All specimens were homogenized. A number of observations indicate that the second phase is CrB₂.

1. The X-ray diffraction patterns show a very strong reflection at 4.5 Angstroms which corresponds to the calculated value for CrB₂.
2. The electron micrographs show a considerable amount of the second phase, which is formed by the reaction.

18 May 64

ENCL 2

SUB CODE: MM

NO REF SOV: 003

OTHER: 010

Card 2/3

ACCESSION NR: AF4036968

S/0078/64/009/005/1169/1173

AUTHORS: Gladyshevskiy, Ye. I.; Fedorov, T.P.; Gorshkova, L.V.

TITLE: The zirconium-tantalum-carbon system

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 5, 1964, 1169-1173

TOPIC TAGS: zirconium tantalum carbon system, x ray analysis, zirconium tantalum carbon alloy, fusion temperature, hardness, chemical inertness, superconductor, phase diagram, ternary compound, heat treatment, zirconium tantalum system, tantalum carbon system, zirconium carbon system

ABSTRACT: The structure of ternary Zr-Ta-C alloys quenched from 1450°C was studied by metallographic and x-ray diffraction analysis. The alloys of this system are characterized by being high melting (about 4000°C), hard (3000 kg/mm²), inert to chemical reagents, and superconductive at low temperatures. Previously known data on the Zr-Ta, Ta-C, and Zr-C binary systems are reviewed. A phase diagram was constructed for the Zr-Ta-C ternary system (see Fig. 1 of the enclosure). In this investigation, no ternary compounds were found, but presence of four single-phase, six two-phase, and two three-phase

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ACCESSION NR: AP4036968

regions was established. It was revealed by microscopic study of the alloys that they had not reached an equilibrium under the heat treatment to which they had been subjected (i.e. annealing at temperatures ranging from 1450 to 2300C for 6 to 70 hours). Orig. art. has: 3 tables and 4 figures.

ASSOCIATION: None

SUBMITTED: 12Apr63

SUB CODE: M4

ATD PRESS: 3077

NO REF Sov: 009

ENCL: 01

OTHER: 006

Card 2/3

ACCESSION NR: AP4036968

ENCLOSURE: 01

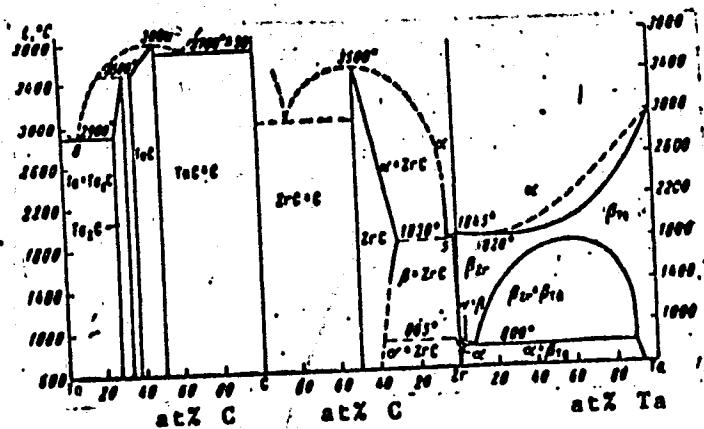


Fig. 1. Phase equilibria in the Zr-Ta-C system at 1450°C.

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Card

TOPIC TAGS: ~~Zirconium~~
~~x-ray crystallography, microstructure~~

~~ABSTRACT: The Zr-W-C system is studied by x-ray and microstructural analysis methods. The phase equilibria are determined in cast and annealed alloys at 1100°C. Previous studies of this system have been devoted solely to the Zr-C-W-C system. The solubility of carbon in zirconium is 2% at 1500°C. This solu-~~

"APPROVED FOR RELEASE: 03/20/2001

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and 100%. Previous studies of the system KCl-NaCl-H₂O indicate that there is a type NaCl

in greater solubility than NaCl. It is expected that there is a type NaCl

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L-1872-65 EWP(e)/EWT(m)/EPF(n)-2/EWP(k)/EWP(z)/EWP(r) Pg 2-1 26-24 05-24 05-24
ADMISION NR: AP5003275 IIP(c) RWH/JD/KW/YC/SP 1965-03-01 1965-03-01 1965-03-01 1965-03-01 1965-03-01 1965-03-01

AUTHORS: Fedorov, T. F.; Kuz'ma, Yu. Z.; Gorskova, L. V.

TITLE: "Phase equilibria in the system zirconium-niobium-titanium."

JOURNAL: Promstekhovaya metallurgiya, no. 3, 1965, 63-71

The phase equilibria in the three-elemental systems presented in the article are shown for six types. Changes in solubility are discussed throughout the article, as are the equilibrium points and their dependence on the nature of the elements of the group and briefly on the temperature. There is one table and 2 figures.

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ACCESSION NR: AP5008275

University)

SUBMITTED: 14Aug63

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SUBJ: UN

17A

OBJCT: UN

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"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000412630003-2

FEDOROV, T.F.; POPOVA, N.M.; GLADYSHEVSKIY, Ye.I.

Ternary systems hafnium - columbium - carbon, zirconium - columbium - carbon and titanium - columbium - carbon. Izv. AN SSSR. Met. no. 3:158-163. My-Je '65.
(MIRA 18;?)

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L 54-84-65

SW/PA/MA/77/10/1

R. R. (Moscow, Lvov)

(Moscow, Lvov); Fedorov, T. F. (Moscow, Lvov)

1. The security of the telephone system.

2. Radio systems which have been developed.

3. The use of the AB-CO-C ternary system at the present time.

L 04484-65

MISSION NR: AP5021502

In the iron group. The various compositions in the system were determined by metallurgy methods using niobium, etc., etc.

4

and Nb₂O₅ form two-phase regions. It was found that

the compound phases are formed in equilibrium with the

Card 2/3

L 04454-65

ACCESSION NR: AP5021567

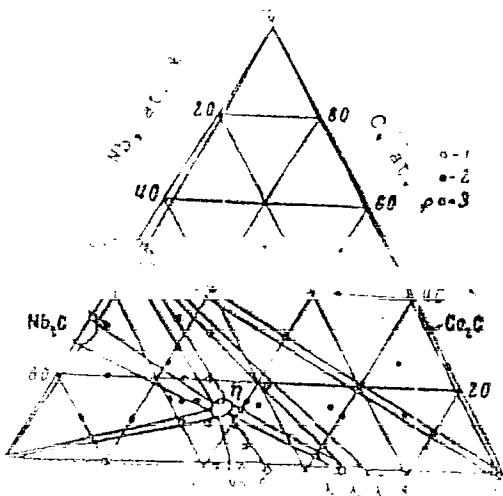


Fig. 1 Diagram of the Nb-C system

1--two-phase alloys; 3--three-phase alloys

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L 32672-66 EWT(m)/EWP(t)/ETI IJP(c) JD/WW/JG/WB/GD
 ACC NR: AT6013571 (N)

SOURCE CODE: UR/0000/65/000/000/0421/0428

44
43
BY1

AUTHOR: Cherkashina, N. V.; Fedorov, T. F.; Shamray, F. I.

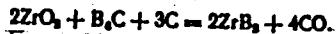
ORG: Institute of Metallurgy im. Baykov (Institut metallurgii)

TITLE: The zirconium-vanadium-boron system

SOURCE: AN UkrSSR. Institut problem materialovedeniya. Vysokotemperaturnyye neorganicheskiye soyedineniya (High temperature inorganic compounds). Kiev, Naukova dumka, 1965, 421-428

TOPIC TAGS: zirconium, vanadium, boron, boride, METAL PHASE SYSTEM, METAL OXIDATION

ABSTRACT: The phase structure and oxidation susceptibility of the binary sections, ZrB₂-VB₂ and Zr-VB₂, of the Zr-V-B system were investigated by x-ray, microhardness, and gravimetric techniques. The individual diborides were prepared by fusion in a Tamm furnace in a hydrogen atmosphere of the oxides and carbides according to formulas:



The intercomponent molar ratio varied from 1:9 to 9:1 in the case of the ZrB₂-VB system and from 1:19 to 19:1 for the Zr-VB₂ system. For all the ratios, the ZrB₂-VB₂ sys-

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L 32672-66

ACC NR: AT6013571

tem was found to be a true two-phase one. After oxidation (1 hour heating in oxygen at 1200°C) the ZrB₂-VB₂ samples gained 0.5-2.0 weight due to the predominant formation of ZrO₂. It was found that ZrB₂ contributed to greater oxidation stability of the ZrB₂-VB₂ alloys. It was found that Zr-VB₂ alloys containing more than 50 mol % Zr had a face-centered lattice with $a=4.618 \text{ \AA}$ [where $1\text{ \AA}=1/1.00202 \text{ \AA}$]. Alloys containing 80 and 90 mol % Zr had a cubic face-centered lattice with $a=4.63 \text{ \AA}$. When subjected to oxidation at 1200°C all samples of the Zr-VB₂ system corroded throughout and turned into powder. Orig. art. has: 1 figure, 6 tables, 2 formulas.

SUB CODE: 11/ SUBM DATE: 03Jul65/ ORIG REF: 003/ OTH REF: 008

Card 2/2

BLG

FEDOROV, T.W.; GLADYSHEVSKIY, Ya.I.

Phase equilibrium in the ternary systems of the fourth and
fifth groups of transition metals with carbon. Porcsh. met.
5 no.1:37-40 Ja '65. (MIRA 18:10)

I. Institut metallurgii imeni Baykova i L'vovskiy gosudarstvennyy universitet imeni Franko.

1 2107265 26961/FWT(m)/EPF(n)-2/lnet(k)/EWI(z)/FWP(r)/FPU(t) 86-4-57-4 Rev-6

Author, I. P. Zirinat, Fig. 1.

TITLE: Phase equilibria in the system zirconium-molybdenum-titanium

SOURCE: Pereshkovaya metallurgiya, no. 3, 1965, 69-74

TOPIC TAGS: powder metallurgy, sintered metal, metallurgy, zirconium, molybdenum

GRAPHIC

FIGURES WITH 2 FIGURES.

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CIA-RDP86-00513R000412630003-2

L 51872-65

ACCESSION NR: AP5008275

ASSOCIATION: Institut metallurgii im. A. A. Pavkova (Institute of Metallurgy)

REF ID: 11 Aug 63

EXCL: 00

NO REP Sov: 006 OTHER: 014

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There is no equilibrium in the system. It is not a closed system.

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REF ID: A671604

OTHER: 001

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1 52014-65 EXP(e)/ENT(m)/SUP(t)/SPF(n)-?/ENG(r)/EPR/T/FAD/+1/FBI/1/VER57-3/

1 52014-65 EXP(e)/ENT(m)/SUP(t)/SPF(n)-?/ENG(r)/EPR/T/FAD/+1/FBI/1/VER57-3/

ACCESSION NR: AP5011828 UR/0192/65/006/002/0313/0314
48.736

6.0

7.5

13

AUTHOR: Borusevich, L. K.; Gladyshevskiy, Ye. I.; Fedorov, T. P.; Proeva, N. M.

New representatives of the structural type were found.

SOURCE: Zhurnal strukturnoy khimii, v. 6, no. 2, 1965, 310-314

TOPIC TAGS: carbide structure, tungsten carbide, iron carbide, mixed carbide,
nickel carbide, cobalt carbide, tantalum carbide.

ABSTRACT: Carbides possessing the structure of β phase exist in the ternary
systems. It is stated that the authors studied the systems
The authors found that a ternary carbide of the type

nickel-tungsten-carbon was found in the system Ni-Ta-C.

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L 53914-65
ACCESSION NR: AP5011828

served intensities, thus indicating that the compounds belong to the type W_3Fe_3C .
Analogous compounds of the same structural type were found in the systems
Nb-Ni-C: Nb_3Ni_3C and V-Fe-C: V_3Fe_3C . (fig. att. has . . .)

SUMMITTED: 05Sep64

ENCL: 00

SUB CODE: IC, MM

AC REF SOV: 002

OTHER: 001

Card 2/2